

WHAT IS CLAIMED IS:

1. A method for producing a bonded wafer, comprising:
an epitaxial growth step for growing an epitaxial layer containing
boron in a wafer for active layer;
an insulating film formation step for forming an insulating film
in a surface of said epitaxial layer;
an ion implantation step, following said insulating film formation,
for ion-implanting of a light element into said epitaxial layer at a
predetermined depth to thereby form an ion-implanted area therein;
a bonding step, following said ion implantation, for bonding said
active layer wafer and a supporting wafer together with said insulating
film interposed therebetween to thereby form a bonded wafer; and
a cleavage and separation step for heat treating said bonded wafer
to cause bubbles of light element to be generated in said ion-implanted
area and thereby a part of said active layer wafer to be cleaved and
separated at the site of said predetermined depth for forming an active
layer.

2. A method for producing a bonded wafer in accordance with claim
1, in which a concentration of boron contained in said epitaxial layer
is 5×10^{18} atoms/cm³ or higher.

3. A method for producing a bonded wafer in accordance with claim
1 or 2, in which a thickness of said epitaxial layer is 0.3 μ m or thicker.

4. A method for producing a bonded wafer in accordance with any
one of claim 1 to 3, in which said ion-implanted area is formed in said
epitaxial layer.

5. A method for producing a bonded wafer in accordance with any

one of claim 1 to 4, in which a thickness of said insulating film is thinner than $0.2\mu\text{m}$.

6. A method for producing a bonded wafer, comprising:

an ion-implantation step for ion-implanting of a light element into a wafer for active layer at a predetermined depth to thereby form an ion-implanted area therein, said active layer wafer comprising an insulating film formed thereon and containing boron at a concentration of 9×10^{18} atoms/cm³ or higher and oxygen at a concentration below 12×10^{17} atmos/cm³ (old ASTM);

a bonding step for subsequently bonding said active layer wafer that has been subjected to the ion implantation and a supporting wafer together with said insulating film interposed therebetween to thereby form a bonded wafer; and

a cleavage and separation step for heat treating said bonded wafer to cause bubbles of light element to be generated in said ion-implanted area and thereby a part of said active layer wafer to be cleaved and separated at the site of said predetermined depth for forming an active layer.

7. A method for producing a bonded wafer in accordance with any one of claim 1 to 6, in which an annealing process is applied to said active layer wafer or said bonded wafer at 1000°C or a higher temperature for one hour or more in a reducing gas atmosphere containing hydrogen gas after said formation of said insulating film in said active layer wafer or said cleavage and separation of said active layer wafer.